© Scott James Stewart 2023 - Born 10/4/64 Sount Perth, Perth, Earth

Written:
Wednesday, 21 August 2019
© Scott James Stewart 2019 All Rights Reserved

This article is speculative science, and conceptual science, not text book science. It is by an unqualified science enthusiast.

CONTENTS

A Conceptual Philosophical Bridge Between Classical And Quantum Physics 1
ABSTRACT 1
PREFACE 1
BACKGROUND 2
A 3D PENDULUM - THOUGHT EXPERIMENT 3
SPECIOUS ALGEBRAIC PSEUDO-MATHS 5
CONSTRUCTS 7
PHYSICAL PHENOMENA 7
PHILOSOPHICAL ASSERTION 8
THE BRIDGE BETWEEN CLASSICAL AND QUANTUM 8
BIZARRE POSSIBILITIES 9
REFERENCES 10

A Conceptual Philosophical Bridge Between Classical And Quantum Physics

ABSTRACT

This essay is authored by a person who does not have science qualifications, but who has had a life-long love of science. There have been reliable reports from trustworthy people that religious militants have on occasion legitimately acquired undergraduate qualifications, intending to infiltrate scientific conferences, and use their qualifications to refute well established evidence-based facts, and dilute the quality of insight that science has delivered. Such conduct is unacceptable. As a conceptual work, the conclusions set out herein surprisingly conclude in a result that eliminates the fundamental incompatibilities between first principles of science and religion, and though not detailed in empirically qualified analysis, some unification is possible if both belief systems are accepted with reasonable respect.

PREFACE

© Scott James Stewart 2023 - Born 10/4/64 Sount Perth, Perth, Earth
Following is a simple conceptual philosophical description based on the established laws of physics in our universe. It is remarkable because bridges quantum and classical physics. It accounts for the strange characteristics of photons, the existence and nature of quantum systems with regards to the Heisenberg Uncertainty Principle and Schrödinger's Cat, it explains the strange properties of photons and wave-particle duality, and it has the most surprising conclusion that substantiates thousands of years of philosophising, and seems to confirm some religious claims.

This article is subsequent to a work that relied on expertise that was remotely provided (see CIA Internet Archive - Project Startgate) but due to the delivery mechanism, it was grounded on an deceipt (Ghosts And Homosapiens In Beginning The Third Millennium [2013] https://docdro.id/Ujjdm36)

(The work contains inter alia a description of how to achieve multiple dimensions within regular Cartesian space, an explanation of the lowest common reducible constituent of matter (derived by factorising Einstein's E=MC2 , a proof theorem for the second law of thermodynamics (a proof theorem for Entropy), an explanation of wave-particle duality, and a description that confirms the CIA / Stanford University work with remote viewing, remote sensing and psychoenergetics to describe pragmatically the telepathic delivery of the deceipt).

BACKGROUND

Multiple Dimensions In Cartesian Space And Wave Particle Duality is discussed in "Cosmology By Request" (https://docdro.id/ReUB1ly). There is discussion of wave-particle duality that applies to the purpose of this hypothetical arrangement. It involves a material state of structure over a time interval when the electron cloud that is a probability wave collapses into 1 or more positions having a probability of 1 that becomes 1 or more valence electrons orbiting the nucleus. "Bohr assumed that photons of energy $|Ef - Ei| = hv = hc/\lambda$ are emitted or absorbed when electrons "jump" from an orbit with energy Ei to one of energy Ef." (Stanford, Tanner 1985).

Visualising an atom that has an orbiting electron in an outer valence shell that is having energy applied in order to elicit a photon, there would potentially be a chart demonstrating (Planck's) radiant photon emission activation energies, or the Compton Effect

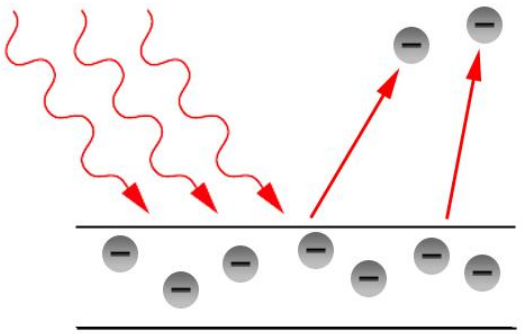
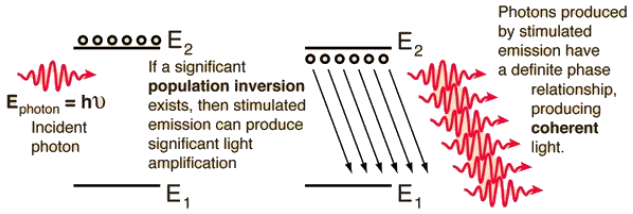


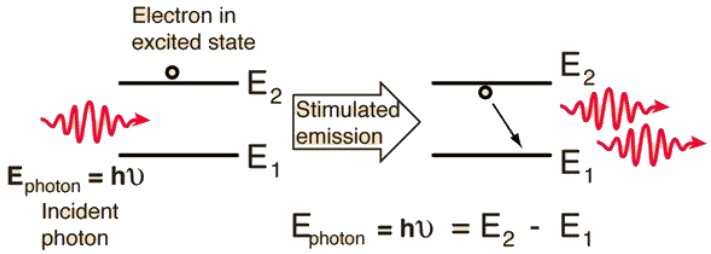
Image courtesy Kuma (https://euresisjournal.org/difference-between-photoelectric-effect-and-compton-effect)

Planck's constant, (symbol h), fundamental physical constant characteristic of the mathematical formulations of quantum mechanics, which describes the behaviour of particles and waves on the atomic scale, including the particle aspect of light. The German physicist Max Planck introduced the constant in 1900 in his accurate formulation of the distribution of the radiation emitted by a blackbody, or perfect absorber of radiant energy (see Planck's radiation law).

The significance of Planck's constant in this context is that radiation, such as light, is emitted, transmitted, and absorbed in discrete energy packets, or quanta, determined by the frequency of the radiation and the value of Planck's constant. The energy E of each quantum, or each photon, equals Planck's constant h times the radiation frequency symbolized by the Greek letter nu, v, or simply E = hv. (Britannica 2018)


E2
E1
Ephoton = hυ
Incident photon
If a significant population inversion exists, then stimulated emission can produce significant light amplification
Photons produced by stimulated emission have a definite phase relationship, producing coherent light.

Courtesy of Georgia State University
http://hyperphysics.phy-astr.gsu.edu/hbase/mod5.html



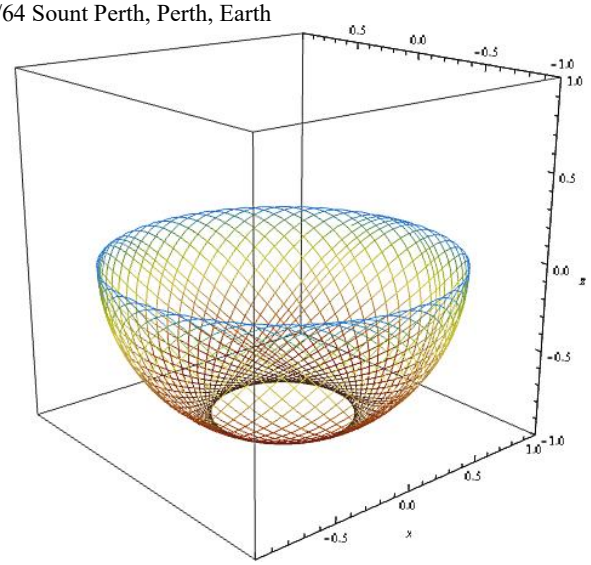
Courtesy of Georgia State University
http://hyperphysics.phy-astr.gsu.edu/hbase/mod5.html

In simplicity, conceptually, once an electron particle(s) has been energized sufficiently, the fundamental forces liberate the subatomic bindings according to the probabilities and forces mentioned in JOC/EFR March 2006, and eventually reach sufficient energy levels (in the diagrams above and "The significance of Planck's constant in this context is that radiation, such as light, is emitted, transmitted, and absorbed in discrete energy packets, or quanta, determined by the frequency of the radiation and the value of Planck's constant." (Britannica 2018)) such that the result is the liberation of a wave/photon that has properties and angular momentums characterising the wave/particle liberation trajectory.

The variable characteristics of this quanta or photon emission are well understood; "The energy E of each quantum, or each photon, equals Planck's constant h times the radiation frequency symbolized by the Greek letter nu, v, or simply E = hv" (Britannica 2018), and they necessarily determine the characteristics of the wave function that is a direct result of the transduction, namely "the wavelike characteristic attributed to particles in quantum physics" (Stanford, Tanner 1985). Although a photon with wavelength λ has no mass, it possesses linear momentum of magnitude p = h/λ. This momentum, or part of it, may be transferred to particles with which photons collide.

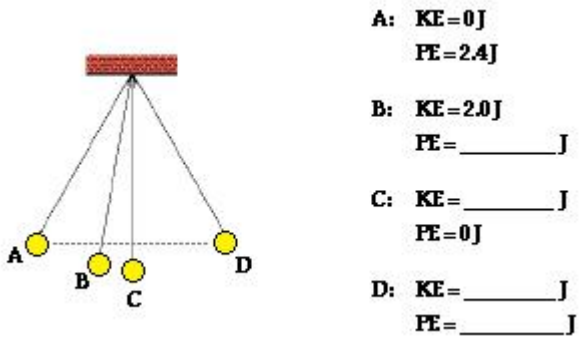
A 3D PENDULUM - THOUGHT EXPERIMENT

The work herein was also the result of a simple thought experiment, that still requires further refinement. It extends one of the most fundamental models of physics, the pendulum model. My thought experiment was an investigation of non-linear chaotic systems, energy, potential (P.E.) and kinetic (K,.E.), and was based around the idea of having a pendulum attached to a single fixed point as usual, but moving through 3 dimensional cosmological space instead of the regular 2 dimensions.



Courtesy of I.Coppo & V. Rougier
At http://physique.unice.fr/sem6/2011-2012/PagesWeb/PT/Pendule/En/study2_spherical.html

The area of rotation of the pendulum is considered to be at some random location in the cosmos, and so subject to unknown and irregular CMB and gravitational effects. The first realisation was that for the pendulum to leave a state of P.E. = 1 and K.E. = 0, to P.E. < 1 and K.E. > 1, it must overcome an asymptotic 'singularity'. If one was to begin measuring such a zone, it would require a modification of regular mathematical equations (and require a second vertical equation to be solved 'simultaneously' [similar to a matrices]).



Courtesy of The Physics Classroom
https://www.physicsclassroom.com/class/waves/Lesson-0/Pendulum-Motion

This model adds a degree of complexity by removing an assumption, and facilitates an investigation that yields data suitable for analysis in 3D statistics (having 2 degrees of freedom) and has applications at a quantum level for understanding the behaviour of parameterized chaotic systems, influenced by Dark Matter and Dark Energy, such as atoms and (collapsing) probability waves that require 3D simultaneous solutions, in Cartesian space.

The idea behind the thought experiment was to examine a chaotic system and to extrapolate well known calculations into a theoretical 3D irregular gravity bound environment. If a force is applied to the stable pendulum in irregular gravity in 3D, the pendulum would begin moving in a chaotic manner, similar to a strange attractor. The orbital path of the pendulum would be a function of the prevailing gravitational fields. Most likely, since any usual point in the cosmos is subject to multiple gravitational fields of varying strengths, the mapping of the path of rotation, the path movement of the weight may never overlap another previous rotation' It would be truly chaotic. It would probably never stop, at least that's the experiment assumption, though in reality this would entirely depend upon the location in space (in the cosmos) of the fixed point (the rotation point), or base of the pendulum.
The realisation from this thought experiment is that there is an asymptotic 'singularity' occupying the region between PE and KE once a force is applied to elicit movement in the weight of the pendulum. There is another

'singularity' between KE and PE if the pendulum is to come to rest. However, these asymptotes are overcome when energy is applied to an atom(s), such that it liberates a photon (infra).

The photon has momentum, but no mass. It has "Relativistic mass (that) is equivalent to energy" and "mass is just that part of the energy of a body which is not kinetic energy" and "The mass is then independent of velocity and is closer to the old Newtonian concept." (Gibbs 1997). Yet the photon (light) consumes distance, which is also time, so it is not PE = 1, and KE = 0, because the transformation between PE and KE requires (consumes) distance. Hence the relevance of the thought experiment infra.

SPECIOUS ALGEBRAIC PSEUDO-MATHS

If you cross-multiply and factorise E=MC2, and then avoid inertial frames of reference ("… an inertial frame has to be understood as a spatial reference frame together with some means of measuring time, so that uniform motions can be distinguished from accelerated motions" DiSalle 2016), you end up with M = C2 / E, or (not strictly) Mass equals Light divided by Energy. You further realise that time is omitted from that famous Einstein equation, and strictly speaking it must be included when you factorise, otherwise you end up with Galilean invariance that violates Einstein's Theory of Relativity, and a meaningless value for the speed of light squared.

THE OSTENSIBLE FACTORISATION

$$E = MC^2 \quad \therefore \quad M = \frac{E}{C^2}$$

(the above excluding photons and quanta)

$$M = \frac{E}{(\lambda \mathbf{x} f)^{2} \cdot \mathbf{x}\ \Delta\tau}$$

Ex-post-facto Correction: 051023
Comments by request (Lionel P/F)
Since my initial error of cross multiplication, the now correct equation (above) indicates a) why the notorious Freemasons (sp. the pedo subhort) keep publishing "God is energy". Well not quite. The above indicates 2 things to me:
1) Einstein knew that fame would be essential to propagate the truth, explaining why he applied Occam's Razor to his work
2) That the substrate of the universe is light.

I still have to retain that the Universe if made of light. But what I have had to change, (having admitted regularly my mathematical shortfalls) is that part (*sup. Infra*) that says "so the substrate of the Universe is consciousness".

So "The substrate of the Universe is light". But (now in this update) it is only knowable by consciousness, that is the only thing in this Universe that is inertially framed, thereby subject only to the precondition of Einstein's Special Relativity.

Too, that consciousness (connotative) is now shown to be a subset, subordinate to light, and intergrated as shown in the denominator above, including time which is distance, intergrated. Note that now light is the denominator, it superstitiously provides an extremely tiny variability, since though it is a maxima, it is subject to the following singularities, that are distortions. The singularity of red shift, in the presence of gravity (*et seq*), and the singularity of the phenomena of "lensing".

Finally, since I am the author of the Doctrin Of Ignorance, I would point out that there is a singularity in light, because time travels omnidriectioonally. No matter where you are in the Universe, at distance = A, you will always see an object as it was A / C^2 ago!

Thanks Lionel. God Bless You. Allah may he be pleased with all of you.

Time is factorized on the right hand side of Einstein's famous equation, though obviously time is inherent in C2 which is measured in KM/s. However, formally adding a time value into the factorization of M = E / C2 avoids the impossibility of inertial frames of reference, based on the relationship of time = distance. This profound inseparability is inescapable cosmologically due to the non-stationary status of all non-terrestrial objects.

I call any such immutable relationship "intergrated", that is, time and distance are intergrated, but not integrated in the calculus sense of the word. I mean the 'materials' are amalgamated, or indistinguishable, one and the same. This is how I use the term "intergrated". So time and distance are intergrated. You cannot increase the value of time in this equation without increasing distance. Mass and matter are "intergrated" because it is impossible to evict the Higgs boson, and achieve one without the other. This intergration also describes the particle-like aspect of electromagnetic waves; appearing in association with the de Broglie wavelength, the wavelike characteristic attributed to particles in quantum physics" (Stanford, Tanner 1985).

Another singularity is encountered if you fail to incorporate an intergrated delta time value into the light demoniator of the equation, and not just to avoid inertial frames of reference. The fact that time and light are "intergrated" is expressed in the words of Tucker (2013) "…time stands still at the speed of light." Light cannot be stationary, so distance is always a positive value, distance is always consumed by light. However, the speed of light has been argued to vary, and is only anecdotally a constant.

VARIABILITY OF LIGHT

Following is a description of an equation based around the pioneering work by Paul Davies of Sydney's Macquarie University on speed of light variability.

This variability is proven true. My favourite example is to point out the incongruities arising of lensing (remembering that this is a relativistic effect of gravity). Either time dilates to result in an absence of Doppler shift indicating zero alteration of the frequency of the 'wave' that necessarily traverses an increased (intergrated) distance through or around the gravitational field, or the frequency dilates to accommodate faster than light traversal of an increased distance, without alteration to the spectra as it does so. I wonder what information theory suggests about the state of the 'wave' prior, during, and especially after its encounter with a gravitational field whose strength cannot be measured.

Either way, the intergration of time and light, of mass and matter, and time and distance, is absolute and unavoidable, though not inflexible, particularly subject to the beyond 4 dimensional mechanical impedance, recently quantitatively inferred by measurement apparatus. Philosophically speaking due to the lack of a physics degree, this concept of intergration is indicating the inherent presence of a singularity, the serves a function like dark matter does (cosmologically for galaxies).

It and a probabilistic imposition of divergent vector based functions that prohibit conventional calculation using scalar equations, yet they are identifiable because they resist the notion of reductionist analysis whilst uniformly adhering to deterministic cohesion. For example, how can the relationship between time and distance be described if both are constant, yet time is unidirectional and distance is omnidirectional. Or how can the passage of one directional time be co-opted as a vehicle of immutable historical information while propagation consumes time and remains subject to entropy. Each of the intergrated phenomena seems to be noumenal according to conventional mathematics, and they are not congruent with quantum limitations. How can Herzenbergs uncertainly principle be applied to any probability that is not at least partially solved, especially since reductionism ever renders attempted calculation of a probability irrational since it relies on integers.

These paradoxical assertions only become evident if the concept of intergration is agreed with. PE can never overcome the asymptote to become KE. Light can never be measured at its finest granularity, and can never be absent of consuming distance. Co-ordinates can never be set or reach the precision necessary to enable quantum weirdness to be ascertained. But this essay of speculative postulation acknowledges these singularities, and steps across them as we usually do, to arrive at a most astounding conclusion.

CONSTRUCTS

So the above accounts and affirms that “the photoelectric effect” governs the emission of quanta that are expressed in “particle like packet(s) of electromagnetic energy” (Stanford, Tanner 1985) called photons. And photons are curious because they are subject to wave-particle duality, the have momentum but no mass, and “Einstein explained the photoelectric effect by saying that “light itself is a particle,” for which he would later receive the Nobel Prize in Physics.” (Puiu 2017). They have zero mass and rest energy. They only exist as moving particles, yet they are electromagnetic waves. They are elementary particles despite lacking rest mass. They have no electric charge, yet they are light waves. They are spin-1 particles which makes them bosons.

We know from quantum physics that all matter is comprised of fundamental sub-atomic particles, that when annihilated are reduced to transducing dissipating energy measured in electronvolts. We also know that waves and particles have a relationship, and I would again use my term “intergrated”. In the quantum domain, the world of matter is described by collapsing probability waves, and characterized by Heisenberg Uncertainty Principle. “The uncertainty principle says that we cannot measure the position (x) and the momentum (p) of a particle with absolute precision. The more accurately we know one of these values, the less accurately we know the other.” (Jha 2013).

We have established that the world is subject to the Quantum Effect, where merely observing a system, changes the system, an extension of uncertainty and Schrödinger's Cat. This ties in the two aforementioned principles in practice, because the scientific investigation of an atom mandates the utilization and/or application of an instrument(s), that immediately changes the properties of the atom being measured. It is said that the atom exists as a probability function, that collapses when a measurement is taken, or an instrument is applied. This is true of electrons that exist in a cloud of probability until a measurement is attempted. Doing so is said to collapse the probability wave, so the velocity or the position can be ascertained, but not both.

PHYSICAL PHENOMENA

So the next piece in this amazing and astounding description of the universe and the cosmos is a simple straightforward chronological description of a series of steps that have been verified in the physics above.
If you apply energy to a material (atom), it utilizes latent energy to change phase from an electron probability cloud to emit and liberate a photon using quanta, and in so doing, overcomes the (asymptotic) ‘singularities’ that I described in my pendulum thought experiment.

The photon is subject to wave-particle duality, and so is an electromagnetic light wave. It is simultaneously a (photon) particle with highly unique and irregular properties, and it propagates according to Maxwell’s laws and equations. “Electromagnetic waves would be capable of exerting forces on charges great distances from their source, and they might thus be detectable. Maxwell calculated that electromagnetic waves would propagate... Electromagnetic waves consist of oscillating electric and magnetic fields and propagate at the speed of light c. They were predicted by Maxwell, who also showed that where μ_0 is the permeability of free space and ε_0 is the permittivity of free space. ” (OpenStax 2019).

The elicitation of a photon from the photoelectric effect, energizing an atom, is a quantum event, accounting for the strange and irregular properties of photons and quanta. However, the original atom belongs to the classical domain of physics, that is disrupted as explained above (infra). So once the photon is liberated, it is subject to quantum

properties, and therefore its properties cannot be known or measured unless an instrument disturbs those properties, thereby collapsing the probability wave, and offering some, but not all, simultaneous properties for measurement. The elicitation of the photon from the atom is the same, a quantum state system, that we can understand at a molecular level, from classical physics.

What is emitted in crossing this singularity is not the particle because it goes into the next valency cloud region. It is a unit of potential that has a perimeter, direction and momentum – namely a quanta or photon. Its interesting property is that because it is only potential and not the particle that remained in the atom, it maintains pseudo kinetic properties of movement for propagation and it has no mass.

PHILOSOPHICAL ASSERTION

The final piece in this jigsaw to conceptually explain the universe relies upon an argument and assertions within philosophy. Descartes stated Cogito Ergo Sum, a epistemological statement that “I am nothing so long as I think that I am something. So after considering everything very thoroughly, I must finally conclude that this proposition, I am, I exist, is necessarily true whenever it is put forward by me or conceived in my mind. (AT 7:25, CSM 2:16f) (Newman 2019). He earlier discusses the possibility of a “deceiver” that I rely to dispute absolutely the truth and reliability of Cogito Ergo Sum.

Jaspers offered something more succinct, certain, and profound. “…only in community with others can I be revealed in the act of mutual discovery” (Classics and Philosophy, 2011). The validity and authenticity of this is discussed in another treatise I wrote titled “Cosmology By Request”.

Descartes establishes that it is possible to verifiably know and assert that we are alive and conscious, there remains the ‘intergration’ of light and time such that Light (C2) = Time α Distance, as established infra. The certain proposition derived from the explanation of cross-multiplying and factorizing Einstein’s equation, is that without light there is no mass or matter, and light means distance and time (intergrated). Without light, there is not time, and without both light and time, there can be no distance (regardless of any temporal proportionality value). Inversely, it is not possible to have time, which is light, without consuming some distance.

There is no time without light. Pragmatically stated, even if you had a mechanical watch, you could not see its face without light, so there would be no time. Taking this logic and syllogism further, without light which is time, two conscious beings (entities) could not verify each other as Jaspers requires, they could only achieve Cogito Ergo Sum, which is insufficient to validate life and being, it only validates consciousness. Without light, there can be no matter, or mass, only empty space, that is unable to propagate sound waves, so verifying being and life can only be achieved visually. If you are the only life form in the universe, are you really “alive”? I think not.

The matter / material that exist in the universe are verifiable and validated once again by consciousness. The instruments we utilize to collect the data that describes them ultimately has no meaning until a conscious life form has interpreted it.

One being is needed to confirm and validate another being, for life to be said to exist. If there is only dark, so there is no time, two beings are not able to validate and verify each other’s conscious existence. They may be separated by some distance (which is time and light), and if the passage of time does not hold, and you cannot see the face of your watch, both living entities may remain unaware of each other, and so fail to validate that they are alive.

THE BRIDGE BETWEEN CLASSICAL AND QUANTUM

So energy is applied through the photoelectric effect and satisfies Relativity, Newton’s hypothesis that the time is invariant to change of inertial frames of reference, and Newton’s Laws of motion are invariant under a Galilean

transformation. A material can be energized and emit a photon, which is a wave particle, which is in fact light, distributed and propagated across distance through time, and for light that has a known maxima speed, there cannot be one property (time) without the other (distance).

But the quanta and the photon are not measurable or visible of their own accord, not from the moment of liberation, and not at any point as they travel, without collapsing the probability wave by applying an instrument attempting to measure one but not more properties. If no measurement can be achieved without collapsing the probability wave, then it is certain that the quanta / photon, the light wave-particle, does not exist verifiably, until the measurement is attempted. Very quantum.

Yet we know that light waves travel through space and time, and we know and can calculate many of the properties of light through Maxwell's work. Yet, even though we expressed and created one, we agree that we cannot actually verify that the photon / quanta exists quantitatively, it is merely a probability.

This probable state remains and governs the light wave from its location and moment of creation, until we apply an instrument (like a telescope, or a camera CCD) and collapse it into measurements. But in the case of life, being, and existence, the critical instrument that measures the wave/particle is the retina. Wherever the wave was initiated, whatever the source, it represents an intergration of time α distance, and is subject to distortion only in strong gravitational fields. However, for two conscious beings, time is prerequisite to life, and visibility and transience provide the opportunity to validate and verify life, through mutual exploration, above existence.

And so it is established that from elicitation to reception, the light did not exist, and it only began to exist, once it collapsed into a classical state by reception upon the retina, even if it has diffracted or reflected off the face of a watch or clock.

And since everything is made of light, which is time, which is distance, but the light does not exist unless transduced from a quantum state to a classical state by the retina, and consciously perceived by a life form, rather than a merely existing entity, the syllogism of logical deduction leads to the assertion that the substrate of the universe must be consciousness, because it represents the only points where measurable properties or features can be ascertained. In between consciousness, utilizing light which is time, everything exists in a quantum state, that defies reasoning, is only probable, and limits opportunities of measurement into paradoxes.

The final meter of this universe and cosmos, being solely the domain of consciousness, is defined by the fact that human consciousness is sequential. It is asserted that there are parallel functions of neurological performance (evident from fMRI and EEG), but conscious perception that precipitates awareness is a sequential realization. We have our 'world' constructed within our brains, and our sensory data being collated by our senses is used to update the world we have awareness of, rather than creating it *per se*. Though it exists as a multi-faceted whole, there is only one perceived world, and it is sequential. Our non-cognitive responses are parallel, but entirely still reliant upon the sequential nature of our perceived world.

BIZARRE POSSIBILITIES

If telepathy and telekinesis exist, then two bandwidths and associated vectors remain unknown. That means to me that there could be more bandwidths unknown. Both telepathy and telekinesis are methods of propagation of legitimate information for language based volitional life forms such as ourselves, and obviously neither are in the spectra of visible light. This makes me imagine the possibility of intelligent creatures that have vision sensitive to these unmapped frequencies, and who may utilise Dark Matter.

This then lends itself to an interesting idea that simplifies the concept of multi-universes. It there are spectra of frequencies and matter that we cannot see but hypothetical other life could, then it would be possible to have simultaneous co-existing domains of space occupying the shape and form of the current universe. In other words, Universes could be like Xmas tree lights (a metaphor I later discovered (26/12/13) has between used in "The Universe : Explore The Edges Of The Unkown – The Complete Season Two") . A set of red ones illuminate a world for

people who can see in that bandwidth, and simultaneously a set of blue ones illuminate a slightly different world for people who can see in that bandwidth, and both of them can be lighting up the same tree (Universe) at the same time whilst not interacting with each other. This is how one Cartesian Euclidean space can accommodate multiple Universes simultaneously without now discredited String theory, and yet to be assessed by E8.

REFERENCES

Department of Classics and Philosophy (2011) “JOURNAL OF INTEGRATIVE HUMANISM”; VOL 7, Issue 1; University of Cape Coast, Ghana; at https://books.google.com.au/books?id=fCO5DQAAQBAJ&pg=PT116&lpg=PT116&dq=jaspers+%22only+in+community+with+others%22&source=bl&ots=6mV_JZ0Qt5&sig=ACfU3U0_jIQ0gOwiUzrnwSsZCQX0V5mWwA&hl=en&sa=X&ved=2ahUKEwjMtYbsiHkAhW37HMBHZC6CtcQ6AEwBnoECA4QAQ#v=onepage&q=jaspers%20%22only%20in%20community%20with%20others%22&f=false

The Editors of Encyclopaedia Britannica (2018) “Planck's constant” Encyclopædia Britannica, December 28, 2018 at https://www.britannica.com/science/Plancks-constant
DiSalle, Robert, (2016); "Space and Time: Inertial Frames", The Stanford Encyclopedia of Philosophy (Winter 2016 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/win2016/entries/spacetime-iframes/>.

Cowing K. (2008) “Speed of light has changed, claims Macquarie physicist” about Professor Paul Davies in SpaceRef https://spaceref.com/press-release/speed-of-light-has-changed-claims-macquarie-physicist/

Gibbs P (1997) “Does light have mass?” at http://www.desy.de/user/projects/Physics/Relativity/SR/light_mass.html

Jha A (2013) “What is Heisenberg's Uncertainty Principle?” Guardian News & Media Limited or its affiliated companies at https://www.theguardian.com/science/2013/nov/10/what-is-heisenbergs-uncertainty-principle

JOC/EFR (2006); “Max Planck And The Quanta Of Energy” at http://www-history.mcs.standrews.ac.uk/Extras/Planck_quanta.html

Newman, L (2019) "Descartes’ Epistemology", The Stanford Encyclopedia of Philosophy (Spring 2019 Edition), Edward N. Zalta (ed.), URL = <https://plato.stanford.edu/archives/spr2019/entries/descartes-epistemology/.

OpenStax College (2019) “Maxwell’s Equations: Electromagnetic Waves Predicted and Observed”, Electromagnetic Waves, Lumen Learning; Located at: http://cnx.org/contents/031da8d3-b525-429c-80cf-6c8ed997733a/College_Physics. License: CC BY: Attribution. License Terms: Located at License. Simple Book Production.

Puiu T (2017) “What exactly is a photon? Definition, properties, facts” ZME Science at https://www.zmescience.com/science/what-is-photon-definition-04322/

Stewart S.J. (2019) “Cosmology By Request” at https://docdro.id/ReUB1ly

Tucker, C (2013) “Riding a Beam of Light & Travelling At The Speed Of Light” at http://www.chongonation.com/articles/oldarticles/light_speed.htm

Unknown author(s) (unknown date) “Energy, Power, Photons” lecture notes from Brown University; at https://www.brown.edu/research/labs/mittleman/sites/brown.edu.research.labs.mittleman/files/uploads/lecture04_0.pdf

Stanford, A, Tanner J (1985) “{Early Quantum Physics“; Physics for Students of Science and Engineering, 23.6 Problem-Solving
Summary; at https://www.sciencedirect.com/topics/engineering/plancks-constant